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Lichtenberg Figures

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Lichtenberg Figürleri

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Submitted/Ba vuru tarihi:
03.05.2011
Accepted/Kabul tarihi:
09.05.2011
Registration/Kayıt no:
11 05 196

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© 2012 Düzce Medical Journal
e-ISSN 1307- 671X
www.tipdergi.duzce.edu.tr
duzcetipdergisi@duzce.edu.tr

SUMMARY

Strike of lightning should be considered in the differential diagnosis of any subject who is found unconscious outdoors. The central nervous system can be affected by lightning strikes immediately or at a later stage. Mainly six types of cutaneous findings occur as a result of being struck by lightning. They include linear burns, punctate burns, Lichtenberg figures, contact burns from overlying metal objects, superficial erythema and their combinations. Lichtenberg figure is pathognomonic for lightning strikes. The cutaneous lesion looks like a fern. Pathognomonic skin findings should not be overlooked.

Key words: burn, environmental medicine, strike of lightning.

ÖZET

Yıldırım çarpması açık havada baygın olarak bulunan hastaların ayırıcı tanısında akılda tutulmalıdır. Santral sinir sistemi yıldırım çarpmasına ba lı hemen etkilenebilece i gibi, geç etkileri de ortaya çıkabilir. Yıldırım çarpmasına ba lı olarak ba lıca altı tip deri bulgusu ile kar ıla abiliriz. Bunlar lineer yanıklar, noktasal yanıklar, lichtenberg figürleri, metallere ba lı termal yanıklar, süperfisiyal eritem ve bunların kombinasyonlarıdır. Lichtenberg figürleri yıldırım çarpması için tanı koydurucu bulgudur. Ciltte olu an lezyon e relti otuna benzer. Patognomonik deri bulguları atlanmamalıdır.

Anahtar sözcükler: yanık, çevresel tıp, yıldırım çarpması

INTRODUCTION

A good history and a careful physical examination are crucial in the diagnosis of a patient presenting with confusion or loss of consciousness. Physical conditions of the environment, the various factors that the individual can be exposed to, and assessment of the weather conditions can be beneficial in making a correct diagnosis (1). Our aim in this case report was to emphasize the strike of lightning, which is one of the rare causes of confusion and to analyze the features of Lichtenberg figures, which is pathognomonic for these cases.

CASE REPORT

A 34-year-old male patient was found unconscious when he was grazing a herd on the mountains. The patient was taken to the state hospital of the town by his relatives and admitted to the emergency department of our hospital by ambulance following first aid. Approximately 15 hours had passed after the event when he reached our hospital. On physical examination, his general condition was moderate; he was confused, and his orientation and cooperation were impaired. He had amnesia, and he did not know what had happened to him. The Glasgow coma scale (GCS) was 13 (E3M6V4). The patient's vital findings were as follows: TA: 110/70 mmHg, HR: 112/min, RR: 16/min, Temp: 37.2°C. On his systemic examination, 2° burns were present on the head and neck (1%), on anterior thorax (5%), in the genital area (1%), on the right and left lower extremity (5% and 4%, respectively). There were ferning marks on the chest, beginning from the midline and extending to the neck (Figure 1). Furthermore, there was a lesion consistent with an outlet hole in the medial



Figure 1: Ferning marks on the chest



Figure 2: A lesion consistent with an outlet hole in the medial part of the right foot near the big toe.



Figure 3: Contact burns from overlying belt buckle on abdomen.

part of the right foot near the big toe (Figure 2). ECG revealed sinus tachycardia (118/min). Leukocytosis was present (WBC 12.900/uL). Biochemistry results revealed hyperglycemia (glucose 172 mg/dL), elevated liver enzymes (Total bilirubin: 2.65mg/dL, Direct/Indirect bilirubin: 0.52 /2.13mg/dL, AST: 257U/L, ALT: 248U/L, LDH: 883U/L) and the cardiac enzymes (CK: 439 u/L, CKMB: 99 u/L, myoglobin: 283.8 ng/mL). Cranial tomography showed no pathology. The patient was diagnosed as a lightning victim and hospitalized in Burn Unit. Supportive treatment was given. His liver and cardiac enzymes returned to baseline gradually. He was discharged on the 15th day without any complication.

DISCUSSION

Lichtenberg figures are pathognomonic signs found in traumas related to lightning strikes. The cutaneous lesion looks like a fern (2). These findings appear one hour after the lightning stroke and disappear in 24-36 hours (3). This lesion can occur in the postmortem period in victims who die (4). The lesion traces do not correspond to any vascular or neuroanatomical patterns (5). Cutaneous or subcutaneous injuries are not present, contrary to thermal or electrical burns (6). Although its pathophysiology is not fully understood (7), the lesions are thought to occur due to erythrocytes infiltrating to the subcutaneous area from the capillaries (8).

Mainly six types of cutaneous findings occur as a result of being struck by lightning. They include linear burns, punctate burns, Lichtenberg figures, contact burns from overlying metal objects, superficial erythema and their combinations (2). In our case, there were contact burns from overlying belt buckle on abdomen (Figure 3). Moreover, entry and outlet holes of lightning strikes are rarely seen (8) which was obvious in our case.

The central nervous system can be affected by lightning strikes immediately or at a later stage. These effects can be permanent or transient. The transient ones spontaneously heal in 24 hours. The transient effects are loss of consciousness and amnesia, and paralysis of the extremities. The permanent effects are seizures, spinal muscular atrophy, amyotrophic lateral sclerosis, Parkinson syndrome, progressive cerebellar ataxia, myelopathy, paraplegia or quadriplegia and chronic pain syndromes. These are generally progressive (8). Our patient had amnesia and alteration of consciousness. GCS was 15 when he was being transferred to the burn unit 6 hours after admission.

The level of muscle enzymes can increase in lightning stroke. The reason for this can be tetanic contractions, myonecrosis due to the high temperature, and burns (9). Muscle enzyme levels increased in our case; however, this increase did not lead to clinical problems. Additionally, we saw elevated liver and cardiac biomarkers as Emet M et al. also reported after a lightning injury (10). They also showed moderate fluid covering the liver. Their patient's enzymes decreased to normal gradually as it was in our patient.

In conclusion, strike of lightning should be considered in the differential diagnosis of any subject who is found unconscious outdoors. Pathognomonic skin findings should not be overlooked.

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